

POLICY XXXX – WATER RESOURCES PROGRAM POLICY

DEFINING AND DELINEATION OF WATER SOURCES IN WATER RIGHTS DECISIONS

Resource Contact: Policy and Technical Support Section

Effective:

Revised: NEW

References: RCW 90.03.265, 90.03.290, 90.03.380, 90.03.390; RCW 90.44.020-030, 90.44.100, 90.44.105, 90.44.130, 90.44.400-430; RCW 90.46.130; RCW 90.54.020(9); Chapters 173-100, 173-150, 173-152 & 173-154 WAC

Purpose: To provide a consistent framework when making determinations regarding the source of water in water resources permitting, rulemaking, or other administrative actions.

Application: Applies to Water Resources Staff¹ when evaluating:

- Surface to surface transfer applications;
- Surface to ground or ground to surface transfer applications;
- Whether a ground water change proposing a replacement or additional well taps the *same body of public ground water* under RCW 90.44.100;
- The boundaries of ground water areas, sub-areas, or depth zones under ground water management provisions RCW 90.44.130, Chapter 173-100 WAC, and rules adopted therefrom,
- Which applications share the *same source of supply* for a cost-reimbursement agreement for expedited review by the department under RCW 90.03.265;
- The number of competing applications within the *same water source* or *source of water* for processing under Chapter 173-152 WAC (Hillis Rule);
- Impairment of water rights within the *source of supply* for reclaimed water proposals under RCW 90.46.130.

Background:

The allocation and administration of water rights in Washington State is based on the Prior Appropriation Doctrine which holds that the “first in time is first in right”. Under this doctrine

¹ This policy is intended for Ecology staff. Other consultants, local government or the general public who use this policy for guidance on Ecology source determinations should contact regional Ecology offices with inquiries about existing management of a particular source of water.

older (senior) right holders are able to exercise their right to the exclusion of junior appropriators based on when they initially established their beneficial use of water.

The establishment of priority for a water right has meaning only within the *source* from which the right derives water. In the case of surface water rights, source has been historically defined as the stream or lake from which water is diverted and can include one or more tributary streams and other water bodies that can be managed together. For ground water, source has been historically defined as an aquifer or aquifer system from which ground water is withdrawn.

During much of the 20th century Ecology and predecessor agencies administered and managed surface water and ground water separately. Eighty-two surface drainage systems (basins) in the state have been adjudicated since 1918 with varying consideration of ground water. However, many of the adjudications conducted after 1970 have included both surface water and ground water sources in recognition of the interconnectedness of those water sources. Similarly, in the last 30 years, Ecology has adopted numerous instream flow rules to protect aquatic resources, with varying consideration of surface water / ground water management.

Hydrogeological science on the other hand has long recognized that interactions between surface water and ground water often require that they be treated as a single entity. This recognition was codified in Washington through the passage of the Water Resources Act of 1971 (Chapter 90.54 RCW), RCW 90.54.020(9), which instructs Ecology to fully recognize the natural interactions between surface and ground waters in its administration of allocation and use programs.

As Washington State enters the 21st century, population growth and competing water interests have resulted in greater pressure being placed on considerations of water source interactions, including:

- Listing of threatened or endangered species has resulted in increased applications to transfer surface water rights to ground water;
- Implementation of more stringent surface water treatment standards has resulted in increased applications by municipalities to transfer surface water rights to ground water;
- Permitting of new ground water rights and drilling of exempt ground water wells has reduced surface water availability for senior water right holders;
- Aquifers in some areas of the State are declining, resulting in increased applications for change to other, usually deeper, aquifers;
- Some local watershed planning efforts have emphasized conjunctive management of surface and ground water rights, while others have focused on developing instream flow rules to protect aquatic resources;
- The lack of certainty in priority of ground water rights due to the absence of ground water adjudications has been a barrier to conjunctive management even when hydrogeologic evidence suggests co-management of the resource is prudent.

Ecology finds itself in a transition period where its historic management efforts have been primarily associated with surface water rights. In the future, the need to manage ground water will increase and in many basins surface and ground water will need to be managed together. In the interim, Ecology must still make permitting decisions requiring source designations, many of which are based in hydrogeologic fundamentals overlain by administrative or regulatory requirements. The purpose of this policy is to describe how Ecology should approach source definition and delineation in its permitting and other decisions.

Definitions:

Conjunctive management: A water resource management scheme in which surface and ground water in hydraulic connection are managed as a single integrated source of water.

Effective barrier to hydraulic flow: Geologic or hydrologic features that reduce or prevent the flow of water, including (1) Geological materials of sufficiently low permeability to effectively prevent the flow of water, (2) Topographic and hydrologic divides that direct water into independent flow regimes, and (3) Geological structural boundaries, such as faults and folds, which prevent the flow of water.

Flow Regime: The spatial and temporal distribution of water flowing through geological (groundwater) and/or under atmospheric media (surface water).

Ground water body: Water contained within geological materials with recognizable boundaries or effective barriers to hydraulic flow and which act as a storage and flow medium for water beneath the earth's surface.

Recharge area: The geographical area from which a body of water draws its supply. Recharge areas include watersheds, sub-areas within a watershed, and ground water catchment areas.

Source of water: Surface and/or ground waters in hydraulic connection which share a common recharge area, participate in a common flow regime and which are separable from other water sources by effective barriers to hydraulic flow, and that the department determines to be an independent water body for the purpose of water right administration.

Surface water body: A stream, lake, wetland, spring or other water feature in which surface land features contain and direct the flow of water in contact with the atmosphere.

Water right administration: Refers to Ecology's authority regarding the allocation and management of water resources in the State of Washington. Includes, but is not limited to the investigation, issuance, and enforcement of water rights, the establishment and enforcement of Instream Flow Rules and Watershed Plans, and the management and enforcement of court issued adjudication decrees. Typically, water right administration begins at the Water Resources Inventory Area (WRIA) level (first order), followed by major tributary river systems (second order), and then at the level of lesser tributary streams (third order).

Determination of Source (Who, When and How?)

Who At Ecology Makes Source Determinations?

Most source determinations require the application of geologic and hydrogeologic principles; therefore licensed hydrogeologists² should have the primary responsibility in defining or designating sources of water. In some cases, other engineering and technical staff may be responsible for such analysis. Ecology's goal is to make technically sound, defensible and consistent permitting and other administrative decisions within the overall administrative framework present in a basin.

When Are Source Determinations Required?

The following are seven primary permitting actions where Ecology has a statutory requirement to determine the extent of a source of supply³.

- Surface to Surface Transfers. Under RCW 90.03.380 points of diversion are to be transferred “without loss of priority” provided there is no impairment of existing rights. The requirement that the existing priority scheme be retained implies that both points utilize the same source of supply. If, after a change, a water right would result in curtailment of junior water user during periods of low flow, that would not have been otherwise curtailed before the change, the result is impairment of the junior water user. Ecology could deny such a change based on impairment. Alternatively, in some cases, it may be possible to condition the transfer to prevent impairment by subjugating the priority date of the transferred water right to the impaired rights.
- Surface to Ground Transfers (or Ground to Surface Transfers). Ecology derives its authority to transfer diversion and withdrawal points between surface and ground water bodies from RCW 90.03.380, RCW 90.44.020-030, RCW 90.44.100 and RCW 90.54.020(9).

Adding wells under RCW 90.44.100 requires Ecology to make “findings as prescribed in the case of an original application”, which includes the public interest and water availability tests. Water availability within the source was evaluated at the time the water right issued as part of the 4 part test for issuing a new water right. However, local water availability within a large source can vary and must be considered in a surface to ground water change.

- Same Body of Public Ground Water: When adding wells to ground water rights (RCW 90.44.100), or when consolidating exempt wells with an existing permit or certificate (RCW 90.44.105), such new wells must be completed within the *same body of public ground water*. The foundation of the same body test is the

² Licensed under Chapter 18.220 RCW and Chapter 308-15 WAC.

³ Additionally, in the context of water system plan review, watershed planning, instream flow development and other water resource management efforts, Ecology may make source determinations.

preservation of the existing priority scheme. The priority system provides certainty to water users as they plan for their projects based on a water supply that may or may not be reliable during times of shortage.

- Ground Water Body Designation and Delineation: Ecology is given authority by RCW 90.44.130 to delineate the boundaries of ground water bodies and to sub-divide these bodies into sub-areas and depth zones in order to protect senior appropriators. Similar authority for the designation and delineation of ground water areas is found under Chapter 173-100 WAC and regulations for protecting ground water withdrawals can be found in Chapters 173-150 and 173-154 WAC. These statutes and rules provide a mechanism for Ecology to define with certainty a particular source management scheme.
- Cost Reimbursement Proposals: Historically, Ecology had to work on applications for both new water rights and changes to existing water right in the order they were filed. However, requests for new rights and transfers surpassed Ecology's processing capabilities in the late 1990s, creating a backlog of pending applications.

In response, the legislature passed several laws aimed at relieving this backlog, including allowing Ecology to consider transfer applications separate from applications for a permit to establish a new water right⁴, and allowing applicants for a new water right or for changes to existing rights to seek expedited review of their application through a cost-reimbursement agreement (RCW 90.03.265). In order for an applicant's application to be processed based on cost reimbursement, the applicant must pay for the cost of processing all other applications from the *same source of supply* that were filed prior to the applicant's request.

- Chapter 173-152 WAC (aka Hillis Rule): Ecology adopted Chapter 173-152 WAC in 1998 to clarify in part its criteria for processing of applications for new water rights and transfers⁵. This rule provides that Ecology will process applications in the order they are received within the *same source of water*, subject to several exceptions. These exceptions include allowing priority processing where public health and safety is at risk, where a proposed use is nonconsumptive or would substantially enhance or protect the quality of the natural environment, and where changes or transfers were filed by participants in an adjudication and where action on the change or transfer was necessary to ensure timely action by the Court. As in the case of cost reimbursement, the foundation of this rule is to provide for orderly processing of rights to utilize a finite resource in the order such requests were filed, subject to extraordinary situations.

⁴ E.g., the "two-lines" bill, codified in RCW 90.03.380(5).

⁵ This rule was adopted in response to the Supreme Court decision in *Hillis v. Ecology*, 131 Wn.2d 373, 932 P.2d 139 (1997).

- Impairment Determinations for Water Reclamation Projects: Reclaimed water is water that has historically been disposed of as waste, but is now treated to a higher water quality standard for use for a beneficial purpose. There are several types of reclaimed water use that the legislature has determined to be a beneficial use of water and in the public interest, including reclaimed water projects derived from treated wastewater, agricultural industrial process water, and industrial reuse water.

The legislature intended reclaimed water to be an alternative water source to offset potable water needs. However, exclusive right to the reclaimed water is only granted if no one else has relied on the historic wastewater disposal, or the impacts of reclaiming that historic disposal have been adequately compensated or mitigated. In order to assess whether existing water users will be impaired, a same *source of supply* determination must be made and then analysis of impairment within that source of water completed.

How Are Source Determinations Made (Management and Technical Considerations)?

Source determinations include both management and technical considerations. Water Right Administration considerations are based on regulatory, adjudicatory or planning decisions at the local level that can affect source boundaries. Technical considerations are rooted in geology and hydrogeology. Both choices include best professional judgment, although in the technical arena such judgment is founded in scientific principles, whereas in the management arena, such judgment may reflect local values, or criteria set by a court, legislative body or regulatory agency.

Water Right Administration Considerations

Staff making source determinations must consider the existing management framework of the watershed or basin in which they are working. The following regulatory, adjudicatory and local management choices may affect permitting decisions:

- Water Right Adjudications. Ecology files a petition, which initiates an adjudication. This policy would be considered in defining the area that is described in the petition. An adjudication by a superior court provides certainty to water right holders of the extent and validity of their water rights and their relative priority amongst adjudicated water rights. Most adjudications in Washington State are on small tributary streams where competition for the limited resource has been long-standing. Many adjudications only considered rights associated with a surface water source. Although increased withdrawal of ground water in continuity with these streams unquestionably affects water availability for adjudicated surface water rights, the courts have created a regulatory structure for curtailment during times of water shortage only for rights that are subject to the adjudication. In time, ground water also may be adjudicated and the management scheme altered. Until that occurs however, Ecology may only regulate amongst water users where certainty in priority is established to settle disputes or allegations of

impairment⁶.

The implications of an adjudicated water source on permitting actions is that source determinations tend to be narrower than what a purely technical deliberation might conclude, in order to ensure that senior water users are not impaired. For example, if a junior adjudicated surface water right holder seeks to transfer a water right to a well, Ecology must conclude that the well could be regulated in the same manner as the surface diversion in order to approve the change without impairing existing rights. This management scheme may prevent a transfer that would otherwise be possible based solely on technical considerations. Historically a call for curtailment of the junior water right would result in immediate curtailment of the surface diversion. If the same call at the proposed well site would result in continued impacts to the stream after ceasing the withdrawal, then these impacts act to the detriment of the senior water user.

- Adoption of Instream Flows. Ecology is charged with protecting existing aquatic and natural resources for the benefit of the public. Ecology adopts an instream flow through rules designed to protect and preserve instream resources and values, including fisheries interests and recreation. An instream flow is considered as a water right with a priority date based on the effective date of the rule. Water rights issued after that date are junior to the instream flow and subject to curtailment when the flow is not met, even if they are based on applications filed before the instream flow rule was adopted.

The presence of an adopted instream flow in a basin is another water right administration consideration that can affect source determinations beyond what a purely technical deliberation might yield. *As in the case of an adjudicated basin, transfers from surface to ground water of water rights junior to the instream flow must be limited to those instances where management of the water right during times of curtailment will not impair the instream flow.*

- Adopted Watershed Plans. Local government was given a significant role in shaping existing resource management and future water allocations through the Watershed Planning Act (Chapter 90.82 RCW). Each plan must include a water budget for its WRIA, and local government can influence how future water resource decisions are made in their watershed. Ecology is a partner in this process and provides technical and regulatory assistance for the plan, and then helps implement planning recommendations. These can include establishment of reserves of water set aside for new allocations, establishment of instream flows by rule, closures, and other measures.

Much like Ecology, local government undertaking watershed plans are faced with determining how to allocate water for the remainder of the resource while simultaneously protecting existing water right holders. In this way, the implementation of a watershed plan can affect Ecology's permitting decisions and source determinations. *For example, a watershed plan recommending conjunctive management of the resource*

⁶ In the meantime, where disputes arise amongst water right holder where certainty in priority is not known, injured parties must seek a judicial remedy for relief (e.g. *Rettkowski v. Ecology*, 122 Wn.2d 219, 858 P.2d 232 1993).

(surface and ground water aquifers together) may lead to broader source determinations than the historic management schemes established through adjudications.

- Other Water Right Administration Considerations. Reservation of waters by the federal government, tribal reserved rights, interstate and international compacts, and other regulatory schemes can affect source determinations. Staff should become familiar with management issues in a particular basin before starting technical deliberations in defining a source of water.

Technical Considerations

Once the management scheme of a particular area is known, qualified Ecology staff apply hydrogeologic principles in defining a source of water. All source determinations are made on the basis of best professional judgment by qualified staff and should be consistent with the management scheme adopted or set for the area. In the absence of an existing management scheme, staff shall make permitting decisions that will not impair existing rights, which is the foundation of the water code.

Although each of the five source determination requirements addressed in this policy use slightly different language, they all are based on the concept of the *source of water* for the water right. A source of water is a body or bodies of water which:

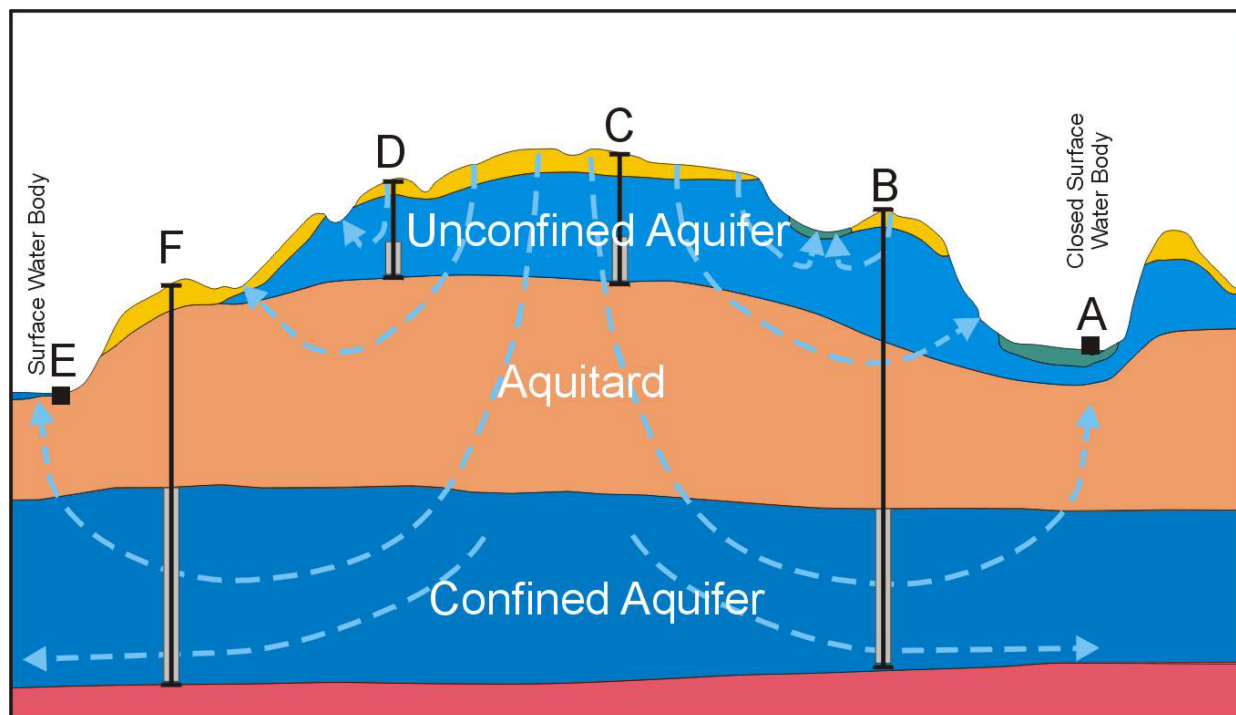
- Are hydraulically connected,
- Share a common recharge (catchment) area,
- Share a common flow regime, and
- Are isolated from other sources by the presence of effective barriers to hydraulic flow.

Source of water determinations are made based on a sufficiency of information and data, which in the judgment of staff are necessary to render a sound, defensible permitting or other decision. This may include consideration of area topography, mapping of geologic structures, investigation of well logs, area water level measurements, aquifer characteristics, and other factors. Ecology staff should refer to future Water Resources Program Technical Guidance, which will provide a greater depth of technical detail for use in defining and determining sources of water. Additionally, the *Report of the Technical Advisory Committee on the Capture of Surface Water by Wells* (1998) and the *Procedural Guidelines for Hydrogeologic Investigations* (1993) may be useful in providing a technical foundation for source determinations. The types of technical information used in making a source designation can include hydrological and hydrogeological studies, reports, computer models, aquifer tests, and stream and ground water hydrographs.

In instances where information on source is either not known or is unclear, Ecology can issue preliminary permits pursuant to RCW 90.03.290 (2) to gather more information before a source determination is made.

Implications of Source Management (Examples)

The following examples are offered to instruct staff on how different source management choices can affect source determinations and permitting decisions. Consider the following illustration.



Example 1

Assume in this example that conjunctive management of surface and ground water supplies has been adopted at the basin level and the aquitard is not an effective barrier to ground water flow. In this case, staff should consider the drawing as depicting two *sources of water*, separated in the center by a hydrologic divide (or other barrier to ground water flow). The following permitting decisions might result from such a management scheme (assuming all other statutory tests for change are met):

- Surface to ground changes from A to B or C may be permissible because they would be considered the same *source of water*.
- Surface to ground changes from A to D or F are not permissible because they would be considered different *sources of water*.
- Because Well C is located near the hydrologic divide, best professional judgment is required to determine which source of water it is located in. Assuming it is in the source

on the right-hand side of the illustration, Wells C and B are in the same body of public ground water.

- Because of the hydrologic divide Wells C and B are not in the same body of public ground water as Wells D or F.
- Processing under Hillis or through cost reimbursement contracts must consider competing applications at A, B and C, but not at D, E or F.
- A proposed water reclamation project supplied by Well C and discharging wastewater at location A would consider the potential for impairment of existing water rights at A, B and C.

Example 2

Using the same illustration, assume in this example that surface water has been adjudicated and instream flows adopted, and that the aquitard has been determined to be a barrier to ground water flow. In this case, staff should consider the drawing as depicting four separate *sources of water*, separated in the center by a hydrologic divide (or other barrier to ground water flow) and separated vertically by the aquitard. The following permitting decisions might result from such a management scheme (assuming all other statutory tests for change are met):

- Surface to ground changes from A to C are permissible provided A can be managed in its historic manner. Generally, water rights senior in the adjudicated management scheme and senior to the instream flow can be moved further away from surface sources than junior water rights, because junior water rights are subject to immediate curtailment during times of water shortage.
- Surface to ground changes from A to B are not permissible because they are not in the same *source of water*.
- Wells B and C are not in the same body of public ground water.
- Processing under Hillis or through cost reimbursement contracts must consider competing applications at A and C, but not at B, and vice versa.
- A proposed water reclamation project supplied by Well C and discharging wastewater at location A would consider the potential for impairment of existing water rights at A and C.

Summary

The choice of management scheme can affect the size and number of sources of water for permitting decisions. In general, conjunctive management results in fewer, larger designated sources of water. As a result, more projects involving surface to ground transfers and same body of public ground water determinations can be permitted. However, that same management choice can increase the number of water rights considered in cost reimbursement agreements, Hillis determinations and reclaimed water impairment analyses.

Conversely, a more highly regulated basin may result in more numerous, smaller sources of water. As a result, fewer projects involving surface to ground transfer and same body of public ground water determinations are possible, but fewer water rights must then be considered in cost reimbursement agreements, Hillis determinations and reclaimed water impairment analyses.

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